Global Priorities for Conserving Sharks and Rays

A 2015–2025 STRATEGY

Global Sharks and Rays Initiative

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A recent analysis estimates that 24% of chondrichthyan species are threatened with extinction, making them among the most threatened of the world's vertebrate groups

SHARK LANDING. © WCS INDONESIA

The Global Sharks and Rays Initiative (GSRI) is a partnership of:

Contents

CITATION

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A Roadmap for Action

SKATE. © JULIE LARSEN MAHER/WCS

The *Global Strategy for the Conservation of Sharks and Rays (2015–2025)*, summarized here, is the product of an intensive 18-month strategic planning process incorporating extensive data analysis and synthesis, including a set of background documents, several technical workshops, and ongoing consultation and review.

This process involved a team of experts representing the following organizations: Shark Advocates International, the Shark Trust, TRAFFIC, Wildlife Conservation Society (WCS), and World Wide Fund for Nature (WWF) International. The co-chairs of the International Union for Conservation of Nature (IUCN) Shark Specialist Group served as technical advisors and contributors to the planning process. This document presents a summary of the global priorities for shark and ray conservation that have been identified through this collaborative process.

Fundamental elements of the strategy include: improvements in governance frameworks and regimes for shark and ray conservation; data collection and scientific investigation to further the understanding of sharks and rays and the pressures on their populations; development and deployment of tools to strengthen technical capacity; and fostering increased commitment, including political will and financial investment, across multiple sectors.

The NGOs that have partnered to develop the global shark and ray conservation strategy are committed to its implementation, through a Global Sharks and Rays Initiative (GSRI). However, it is clear that such an ambitious effort involves a much broader range of private and public sector organizations, agencies, and institutions. This Global Strategy provides a roadmap for expanding commitments and prompting action to ensure the conservation of these vulnerable and valuable fishes.

Global priorities are articulated as a comprehensive set of interventions at different levels aimed at:

- Saving Shark and Ray Species;
- Managing Shark and Ray Fisheries for Sustainability;
- Ensuring Responsible Trade in Shark and Ray Products;
- Encouraging Responsible Consumption of Shark and Ray Products.

ACKNOWLEDGEMENTS

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A Global Vision for Shark and Ray Conservation

Sharks, rays and chimaeras[1] – the chondrichthyan fishes – have evolved over 400 million years. They make up one of the oldest remaining groups of vertebrate animals and one of just three classes of living fishes. Today, as many as 1,250 ecologically and evolutionarily diverse species[2] of chondrichthyans inhabit the marine and fresh waters of our planet, with approximately one new species discovered each month.

TRACKING SAWFISH. © DAVID MORGAN

These fishes have developed a remarkable range of morphological and mechanical features, including bioluminescence, pockets, saws, hammers, stingers and electricity, which, along with the sheer size and power of the most iconic species, have long captured imaginations. Sharks and rays also exhibit the greatest diversity in reproductive modes of all vertebrates, including species with the largest egg (16cm diameter) and the longest pregnancy (ca. 31 months) in the entire animal kingdom.

There is much to learn from the chondrichthyans about how complex life has evolved and adapted to changing conditions on Earth over many millennia.

Sharks and rays are irreplaceable components of the world's biodiversity and perform vital ecological roles. They also have significant economic and cultural values in many societies. However, these animals are at great risk; a recent analysis by the IUCN Shark Specialist Group[3] estimated that 24% of chondrichthyan species are likely threatened with extinction. This high rate of risk, caused primarily by overfishing, distinguishes this group of fishes as among the most threatened of the world's vertebrate groups.

Many tens of millions of sharks and rays are killed every year:

- in target fisheries,
- landed as secondary catch in fisheries targeting other species, or
- discarded as unwanted bycatch.

A major driver of shark and ray fishing, and resulting population declines, is the strong and in some cases growing demand for shark and ray meat and fins, as well as other products such as mobulid[4] gill plates and shark liver oil.

This Global Strategy aims to end this overexploitation and build the foundation for a global transformation in the conservation outlook for these species.

VISION:
Sharks and rays throughout the world are fulfilling their ecological roles, sustaining well-managed fisheries, and are valued by all for their critical contribution to ecosystem health and human well-being.

GOAL:
By 2025, the conservation status of the world's sharks and rays has improved – declines have been halted, extinctions have been prevented, and commitments to their conservation have increased globally.

[1] Class Chondrichthyes incorporates the cartilaginous fishes – both the elasmobranchs (sharks, skates and rays) and the chimaeras. For simplicity, and to reflect the primary focus of the Global Strategy, this document refers to "sharks and rays", understood to encompass the elasmobranchs.
[2] While estimates place the total number of species at nearly 1,250, 1,150 have thus far been described, and 1,084 of these have been assessed for the *IUCN Red List of Threatened Species*.
[3] Dulvy ***et al***. 2014.
[4] "Mobulid gill plates" refers to those from the manta and devil rays.

Sharks and Rays Under Threat

The major threat to shark and ray species is overfishing. A global expansion of shark and ray fishing has been underway for several decades, as populations of more favored food fish have been depleted and/or become subject to more stringent fisheries restrictions. While other factors, particularly habitat loss, also play a part, the primary cause of declining shark and ray populations is quite simply the fact that they are being fished at rates that exceed their capacity to replenish.

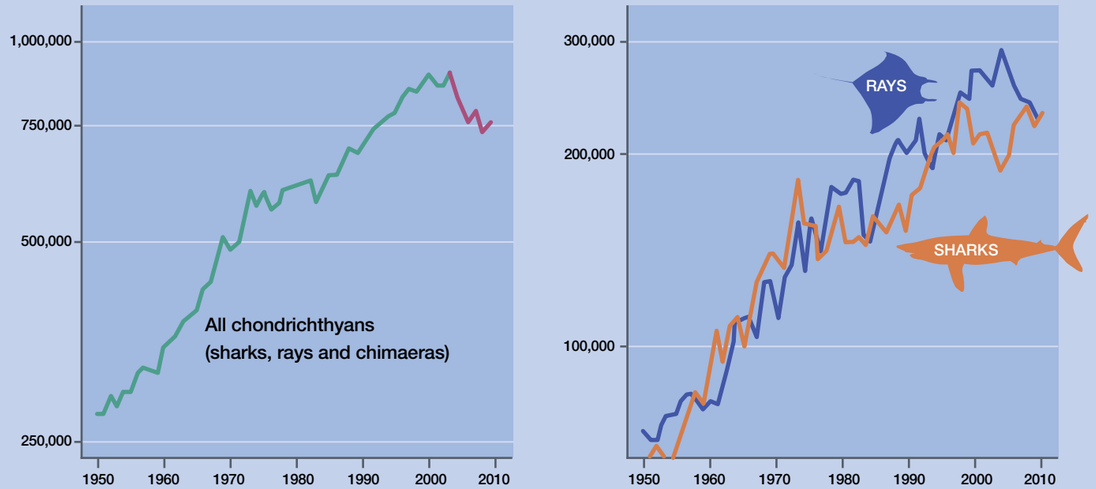
Sharks and rays typically grow slowly, mature late, and produce few young. These life history traits render them particularly vulnerable to overfishing and slow to recover from depletion. As a result, whole families of shark and ray species are today threatened with extinction. Indeed, reported global landings of sharks and rays peaked in 2003 and have since dropped by approximately 20%, most likely due to declining populations[5].

Of the 1,038 species of sharks and rays currently assessed for the *IUCN Red List of Threatened Species*[6], 181 are listed in one of the three threatened categories, including 20 species classified as Critically Endangered, another 127 are categorized as Near Threatened. A full 45% (472 species) are classified as Data Deficient, and many newly discovered species have not yet been assessed. Overall, less than 25% of sharks and rays are assessed as of Least Concern, meaning that the great majority of these species are in need of conservation attention. Furthermore, the conservation status of rays (including skates, sawfishes, and guitarfishes) is worse than that of sharks, but they are generally afforded less attention than their better-known, and more charismatic, relatives. This Global Strategy explicitly addresses the need for concerted action for the rays as well as the sharks.

EGG CASE. © SANDER VAN DER WEL

[5] FAO (2014), Davidson *et al*. (2015).
[6] IUCN 2015. The total number of chondrichthyan species assessed at this time is 1,084, but this includes the 46 species of chimaeras, which are not threatened and therefore not currently a priority of this Global Strategy.

Annual capture production data for sharks and rays as reported in FAO statistics – landings (tonnes)



Left panel: total reported shark and ray landings per year rose steadily until the peak in catch in 2003.
Right panel: landings of sharks (orange line) and rays (blue line).

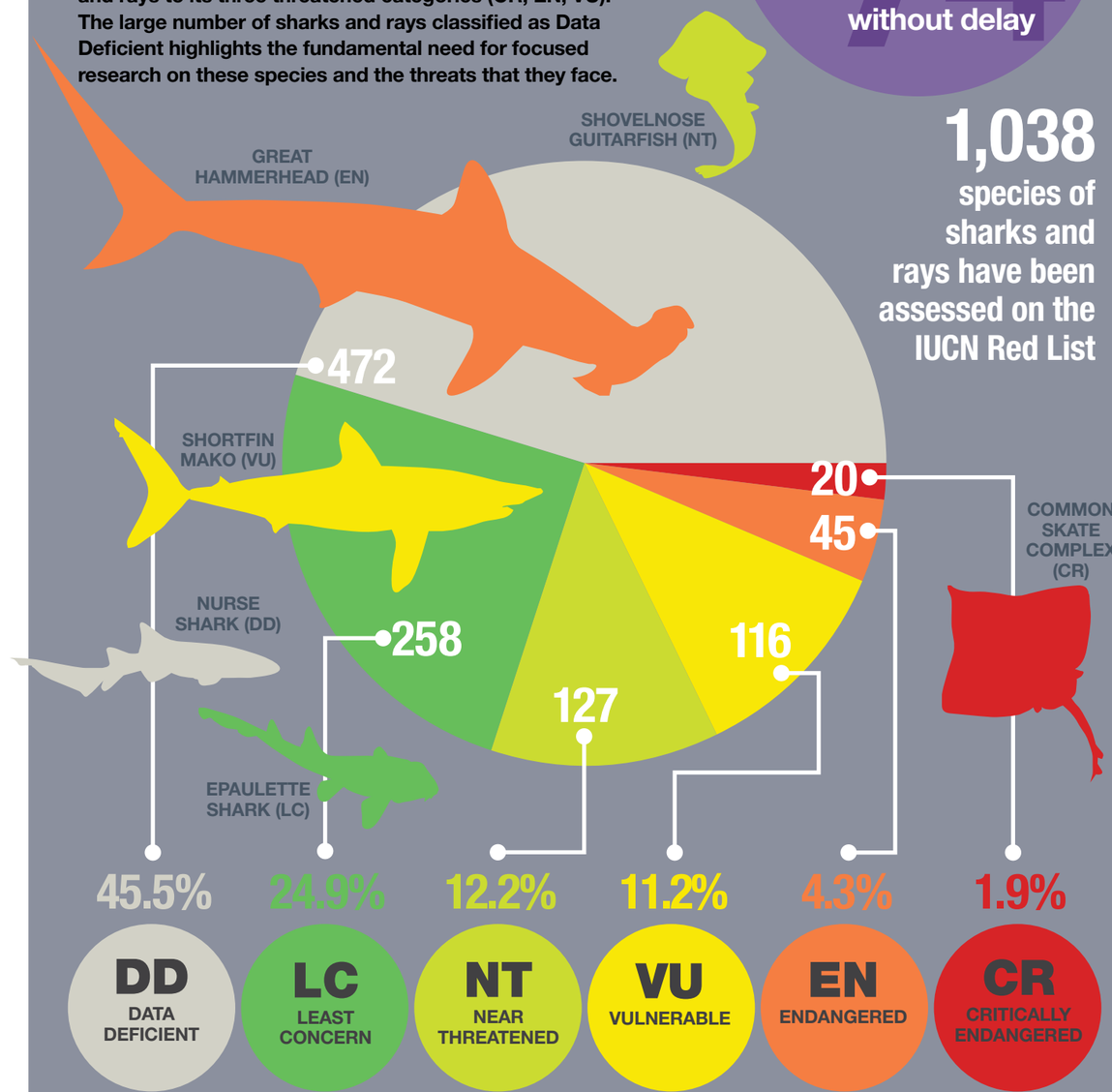
Source: Dulvy *et al*. 2014, http://dx.doi.org/10.7554/eLife.00590.003

Existing conservation measures are not enough

The *IUCN Red List of Threatened Species* – the world's most authoritative such list – assigns a total of 181 species of sharks and rays to its three threatened categories (CR, EN, VU). The large number of sharks and rays classified as Data Deficient highlights the fundamental need for focused research on these species and the threats that they face.

An estimated 1/4 of shark and ray species are threatened with extinction* and require action without delay

1,038 species of sharks and rays have been assessed on the IUCN Red List



Figures correct as of 12 November 2015. These figures do not include the 46 species of chimaeras, of which 24 are DD, 19 LC and 3 NT.
See www.iucnredlist.org. *Dulvy *et al*.'s (2014) analysis estimated extinction risk for all chondrichthyan species, including those assessed as DD.

Conservation Status by Habitat Type (Total no. of species = 1,030[7])	IUCN Red List Status (2015)					
	THREATENED					
	CR	EN	VU	NT	DD	LC
Coastal Continental (494)	16	28	83	75	188	104
Pelagic (39)	0	3	15	12	4	5
Deepwater (465)	1	7	17	39	258	143
Freshwater (32)	3	7	1	1	18	2
TOTAL (1,030)	**20**	**45**	**116**	**127**	**468**	**254**
***IUCN Red List of Threatened Species* Status** CR=Critically Endangered; EN=Endangered; VU=Vulnerable; NT=Near Threatened; DD=Data Deficient, and LC=Least Concern)						

Adapted from Dulvy *et al.* (2014)

[7] A total of 1,038 shark and ray species have been assessed on the *IUCN Red List of Threatened Species* as of November 2015, but this includes eight LC or DD deepwater epipelagic sharks which do not fit within a single habitat type designation. Although these eight species are currently eluding fisheries and other anthropogenic impacts, the status of all chondrichthyans will be monitored as part of the ongoing Red List assessment process, and any changes in status will be addressed through adaptive implementation of the Global Strategy.

Since less is known about sharks and rays than many other vertebrate groups, and because it offers a basis for prioritizing actions to conserve these species, the IUCN Red List assessment process is crucial to conservation efforts. As the world's most authoritative list of threatened species, it provides the foundation for setting priorities, informing implementation of conservation efforts, and galvanizing interest around the plight of the world's sharks and rays. It is therefore vital that Red List assessments are continually updated to include newly discovered species, report changes in species' conservation status, and allow the impact of interventions undertaken as part of this Global Strategy to be monitored and evaluated. As implementation of the strategy progresses, actions will adapt to new knowledge or changing circumstances reflected through this "living" list.

HAMMERHEAD EMBRYOS. APEX PREDATORS PROGRAM/NEFSC/NOAA.

CAT SHARK. © SALLY SHARROCK/THE SHARK TRUST

Inadequate governance of fisheries at national and international levels poses a particular challenge to the conservation of sharks and rays. Many species migrate across national boundaries, often into international waters, and are landed in multiple fisheries that vary significantly in scale and control. Meanwhile, the international trade in shark and ray products involves numerous centers of demand and complex flows between and within countries, regions, and continents.

These challenges are exacerbated by institutional gaps, including: insufficient data on the biology, population status, and threats to different species in different regions; and inadequate funds, technical capacity, and political will to properly monitor, manage, and control shark and ray fisheries and trade. Conservation efforts for these species have been fragmented, dispersed, and under-resourced. This Global Strategy aims to mitigate these challenges under a comprehensive and unifying framework for collective action.

Sharks and rays face a precarious future – with serious consequences for marine and freshwater ecosystems and the human communities and economies that depend on them. Based on substantial expertise from key disciplines, this holistic Global Strategy represents an unprecedented, coordinated initiative to brighten that future.

A Window of Opportunity

The 2013 listing of seven commercially exploited species of sharks and rays on CITES (the Convention on International Trade in Endangered Species of Wild Fauna and Flora) Appendix II[8] was the latest in a series of international policy milestones which together create an opportunity to turn the tide towards major conservation improvements.

ROUND RAY AND CONSERVATIONIST © JULIE LARSEN MAHER/WCS

[8] This includes five shark species (oceanic whitetip shark, porbeagle shark, and scalloped, great and smooth hammerhead sharks) and both manta rays. The great white shark, whale shark and basking shark were already listed in CITES Appendix II. Species included in Appendix II are not necessarily threatened with extinction, but trade is controlled to avoid utilization incompatible with their survival. The sawfishes are included in CITES Appendix I.

[9] Two of the seven sawfish species listed by CITES are now understood to be synonyms; recent reassessment has clarified that there are five valid extant sawfish species.

[10] Davidson *et al*. 2015.

The policy milestones include:

- the 1994 CITES Resolution on the Status of International Trade in Shark Species;
- the 1999 FAO (United Nations Food and Agriculture Organization) IPOA-Sharks (International Plan of Action for the Conservation and Management of Sharks); and
- the 2010 CMS (Convention on the Conservation of Migratory Species of Wild Animals) Memorandum of Understanding on the Conservation of Migratory Sharks.

Momentum for change was also boosted by numerous national efforts and ground-breaking measures adopted by Regional Fishery Bodies (RFBs), including Regional Fisheries Management Organizations (RFMOs). These advances were in direct response to the growing recognition of the threats to sharks and rays and – bolstered by awareness-raising campaigns and new governmental conservation commitments – constitute a promising enabling environment in which to launch a Global Strategy.

While only 17 species of sharks and rays are currently listed on the CITES Appendices[9], these listings have great potential to advance efforts to transition the international trade in all shark and ray products towards sustainability. The effective implementation of CITES is ultimately the responsibility of individual countries, but many of the 181 CITES Parties have not yet put in place the necessary laws, regulations, and procedures to achieve this for the listed sharks and rays. To accelerate implementation, and seize the CITES opportunity, significant investment is needed to empower governments to meet their national and international commitments to the shark and ray species under their jurisdiction.

Whereas CITES is predominantly focused on trade, the FAO IPOA-Sharks provides important guidance for more comprehensive shark and ray fisheries management, and lays out a clear process for countries to develop their own management regimes and regularly revised National Plans of Action (NPOAs). Progress on this voluntary international instrument has been exceptionally slow, with few countries producing a comprehensive plan; indeed, despite IPOA-Sharks' recognition of the urgent need for action, 15 years after its adoption only 9% of the global live weight shark and ray catch is taken by countries that have produced an adequate NPOA[10]. In many cases, this is due to a lack of expertise and capacity, illustrating the huge challenge faced in transforming international commitments into action.

There is currently an unprecedented window of opportunity to transform the conservation of the world's sharks and rays, supported by increased public and government interest in these species. This Global Strategy capitalizes on these heightened levels of support to drive fisheries policy reform, establish effective trade controls, build technical and other capacities, and facilitate the engagement of more stakeholders in shark and ray conservation. The Global Strategy identifies priority actions, in four interconnected strategic areas of intervention, aimed at achieving these goals.

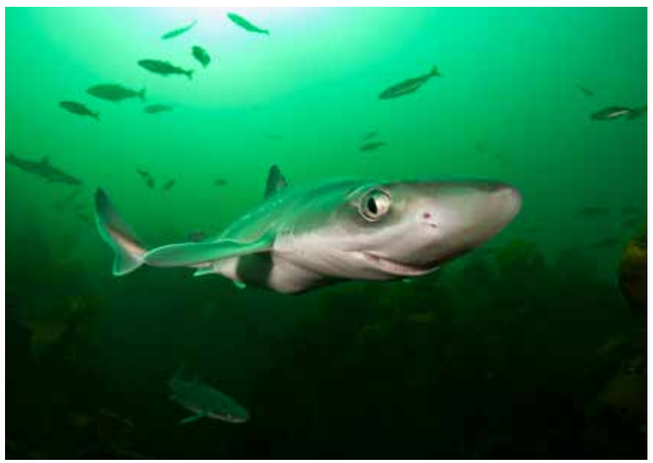
Strategic Areas of Intervention

This Global Strategy aims to dramatically alter the current trajectory of shark and ray decline by promoting the protection and recovery of the most endangered species, advancing the understanding and conservation of all species and their critical habitats, and ensuring that the fisheries, trade and demand for these species shift from overexploitation towards sustainability.

To achieve this requires an ambitious, holistic approach, with multiple activities spread across four concurrent and interconnected strategies:

- Saving Shark and Ray Species;
- Managing Shark and Ray Fisheries for Sustainability;
- Ensuring Responsible Trade in Shark and Ray Products;
- Encouraging Responsible Consumption of Shark and Ray Products.

The four strategies are designed to be closely linked and encourage synergy of action at different levels. Crucially, all four strategies combine a variety of approaches, simultaneously encouraging regional cooperation and the widespread progress that can be triggered by international and regional agreements, while also taking into account the specific circumstances, constraints, and conditions at a national level, where critical decision-making and implementation take place.



SPURDOG. © LILL HAUGEN/THE SHARK TRUST

A defining feature of the Global Strategy is that these coordinated, integrated strategies are designed to be taken forward through an established NGO partnership, working in collaboration with numerous other public and private sector actors. Together, we aspire to change how sharks and rays are viewed and conserved.

Three fundamental distinctions inform this strategy:

- FIRST is the recognition that some species or populations can (if properly regulated) support certain levels of exploitation, while others – because of severe depletion or intrinsic vulnerability – cannot withstand, and should not be subjected to, any extractive use. The Global Strategy incorporates a focus on securing strict protections for the most threatened species, while ensuring that the use of other species is, or becomes, sustainable.

- SECOND are the differences between the improvements in fisheries management necessary in countries with weak shark and ray fisheries management compared with those required in countries which already have comprehensive management regimes in place. Countries with more advanced shark and ray fisheries management can not only continue to strengthen that management, but also develop models of best practice and provide technical and other assistance to efforts beyond their jurisdictions.

- THIRD is the fact that actions need to be carefully tailored to reflect the great variability and complex dynamics of fisheries and markets in different parts of the world. For example, very different approaches in promoting responsible consumption are likely to be successful in countries where traceable and certified seafood are available, accepted and affordable, compared with those in countries where they are not.

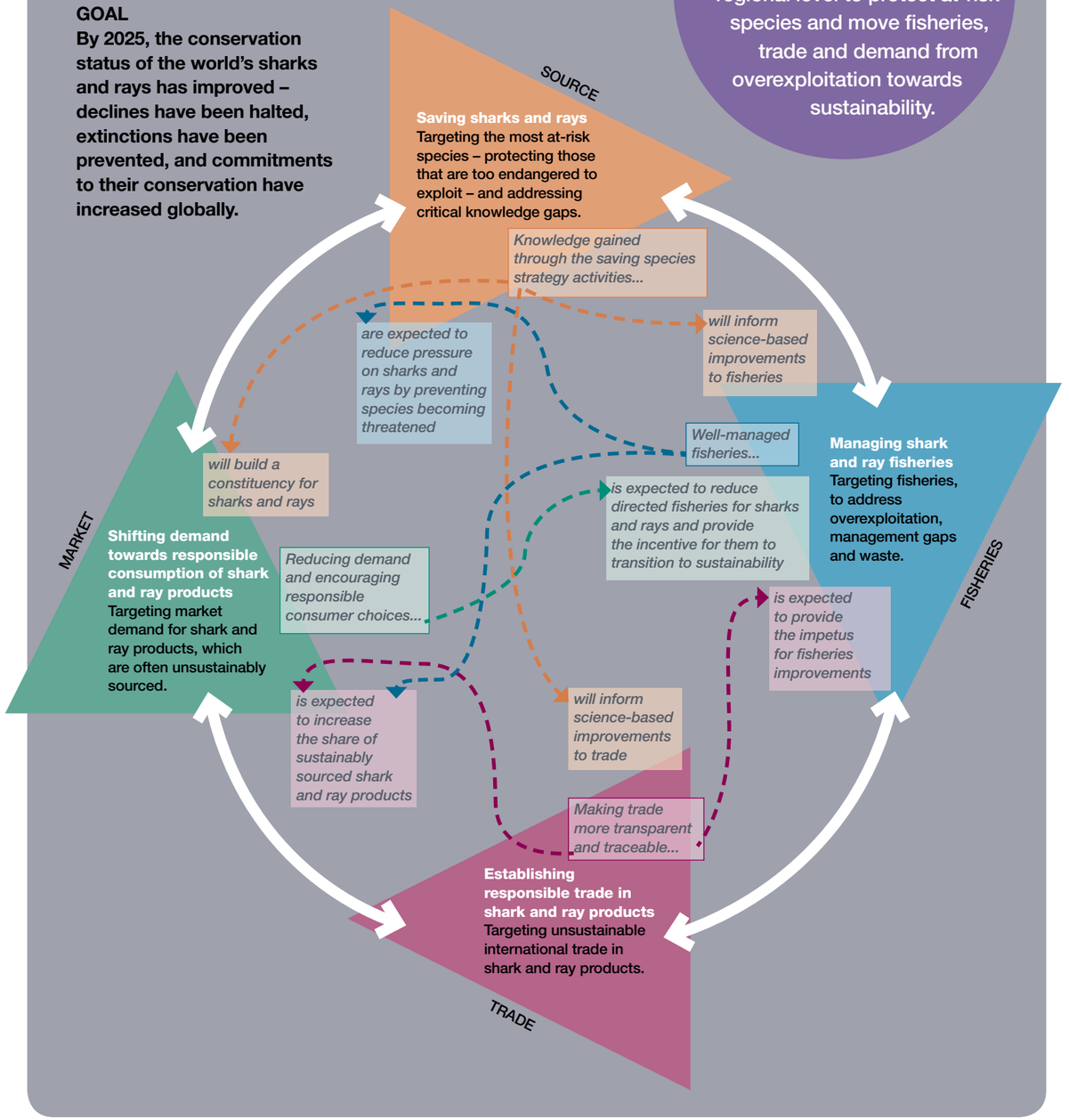
The order in which the four strategies and selected activities are presented here does not reflect any chronological or priority ranking. Prioritization of interventions will take place on an ongoing basis, to respond to the realities of the political environment and changes in capacity, to build on successes, and to take advantage of new opportunities and address challenges as they arise.

Strategic Plan

Global Strategy for the Conservation of Sharks and Rays

The Global Strategy entails four concurrent and synergistic sub-strategies, implemented at the species, country and regional level to protect at-risk species and move fisheries, trade and demand from overexploitation towards sustainability.

GOAL
By 2025, the conservation status of the world's sharks and rays has improved – declines have been halted, extinctions have been prevented, and commitments to their conservation have increased globally.



SAWFISH CONSERVATION. © DANA M. BETHEA/NOAA

Saving Shark and Ray Species

A global effort to conserve sharks and rays must include not only actions to prevent extinctions of the most threatened species, but also investigation of the status and conservation needs of poorly known species, and ongoing progress made in conserving all species.

The Saving Species Strategy sets priority species based on: *IUCN Red List of Threatened Species*[11] conservation status; population trends; and evolutionary distinctiveness. Geographic priorities are based on: species richness; threat; levels of endemism[12]; and likelihood of conservation success. Analysis of related criteria reveals several particularly important countries, regions and territories.

Urgent interventions are needed to prevent the extinction of threatened endemic coastal shark and ray species, including the Critically Endangered Brazilian guitarfish (*Rhinobatos horkelii*) and ornate sleeper ray (*Electrolux addisoni*) and the Endangered angular angel shark (*Squatina punctata*), and to conserve the most threatened families of sharks and rays. Securing the future of these species requires active interventions in several "hotspot" countries, regions and territories: Argentina, Australia, Brazil, Colombia, Indonesia, Japan, Madagascar, Mozambique, South Africa, Uruguay and Taiwan. Because many more wide-ranging species also rely on these "hotspots," interventions carried out in these locations are likely to benefit numerous other threatened species.

2025 SAVING SPECIES GOAL:

Declines of the most endangered shark and ray species have been halted, and the conservation status of Data Deficient species is understood.

PRIORITY SPECIES

Critically Endangered and Endangered Species. Immediate-term actions focus on four of the most severely threatened families that each incorporate several endangered species: sawfishes (Family Pristidae), angel sharks (Family Squatinidae), guitarfishes (Family Rhinobatidae), and wedgefishes (Family Rhyncobatidae). Of the species in these families, 36 (49%) are threatened due to unmonitored and largely unmanaged inshore coastal fisheries in both temperate and tropical countries. Many of them are taken as secondary catch and are valued for domestic and international markets. To prevent their extinction, these species require extremely focused and active interventions, including: stringent fishing prohibitions, intensive bycatch minimization, and specific habitat protections.

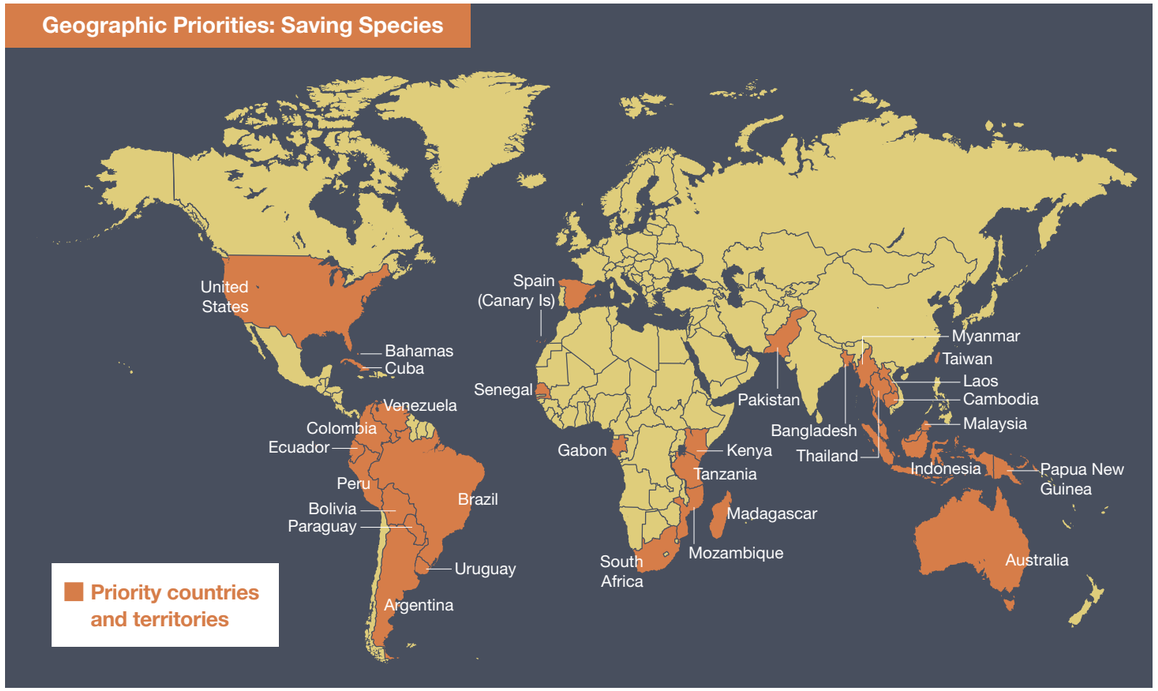
Freshwater Species. This group includes the 32 Critically Endangered, Endangered and Data Deficient sharks and rays which are only found in freshwater: four *Glyphis* river sharks and 28 stingrays or whiprays, 19 of which (the Family Potamotrygonidae) live in the rivers of northern South America. The threats facing these species include fisheries-related mortality and habitat loss, as well as, for some species, collection for the aquarium trade.

Data Deficient and Newly Discovered Species. More than 45% of shark and ray species are currently classified as Data Deficient (meaning that information is insufficient to assess the level of threat). Many of these species – the "lost" sharks and rays – have not been seen for decades and may already be extinct. Data Deficient species need targeted field research and data analysis, not only covering their distribution, populations and ecology, but also the impact of fishing and other pressures. In addition, each year, approximately 12 new shark and ray species are discovered, many of which are vulnerable to overexploitation.

[11] Although the most complete analysis of extinction risk of chondrichthyan fishes is presented in Dulvy *et al*. (2014), the *IUCN Red List of Threatened Species* (www.iucnredlist.org) is updated regularly to incorporate the results of periodic assessments.

[12] Endemism is defined here as occupying an area of less than 500,000 km².

Geographic Priorities: Saving Species



STRATEGIC PRIORITIES

An initial conservation focus on these priority species groups will address 27 of the 65 shark and ray species currently classified as Critically Endangered or Endangered. Near-term actions focus on the priority geographic areas that are key to the conservation of one or more threatened species group(s) and/or are hotspots for endemic threatened species. Priority species and actions will be updated on an ongoing basis, as new information becomes available.

PLAN OF ACTION

Interventions are grouped around three components: ensuring strict national protection for endangered species; ensuring that multilateral environmental agreements (MEAs) and marine protected areas (MPAs) effectively address the species that fall under their remit and generate positive outcomes for shark and ray species more generally; and gathering and analyzing data. Each of these components includes multiple species and interconnected national and regional level activities and targets, all aimed at meeting the 2025 Saving Species Goal.

ANGEL SHARK. © TONY GILBERT

Actions focus on halting population declines and initiating recovery through strict national protections of the most endangered species in priority regions, beginning with sawfishes, angel sharks, guitarfishes and wedgefishes. The first priority is securing legal protection for the Critically Endangered sawfishes, which will help pave the way for protecting other endangered species. Engagement in the EDGE project[13] will help draw public attention to the world's most "Evolutionarily Distinct and Globally Endangered" shark and ray species by showcasing their unique features and long evolutionary history. The greatest need for investment is in those tropical countries where biodiversity is high and resources are most limited, but actions should also be directed towards countries with promising and better resourced shark and ray management in place, such as the USA and Australia, to secure and export lessons from "back-from-the-brink" successes.

Supporting the effective implementation of species commitments made in MEAs, including CITES, CMS and the United Nations Regional Seas Conventions, and promoting stronger collaboration among the MEAs and with RFBs are important priorities, as cross-sectoral approaches are essential for enhancing the conservation of these species over the immediate and long term. The 2011–2020 Aichi Biodiversity Targets[14] provide additional impetus for expanding and improving MPAs. Currently, MPAs are not working for sharks and rays; less than a handful of threatened species have a significant fraction of their range protected within the existing global MPA network. Ensuring that new MPAs are designed to be effective for sharks and rays, and that established MPAs are implemented in a way that delivers concrete benefit to these species requires marine spatial planning focused on species conservation. Local protection targets, such as critical habitats (e.g., nursery grounds and aggregation sites), will be identified through expanded field research and data analysis, and appropriate data management tools will be developed to guide the planning and management of MPAs of various types, including time-area fisheries closures.

Finally, undertaking new research and gathering and analyzing essential data will help to clarify the status of the hundreds of Data Deficient, "lost," and newly discovered shark and ray species. This will assist the identification of potential threats to these poorly known species and facilitate more definitive IUCN Red List assessments. Regular updates to Red List assessments, based on new data, are crucial for tracking progress and reassessing priorities.

SELECTED ACTIVITIES:

- Supporting the development of regional sawfish conservation networks.
- Producing a field and trade identification guide to guitarfishes and wedgefishes.
- Supporting effective implementation of CITES and CMS.
- Conducting a meta-analysis to determine which species are most likely to benefit from MPAs, and which current MPAs can be tailored to improve shark and ray protection.
- Collecting and analyzing data on Data Deficient species to support IUCN Red List reassessments.
- Developing Living Planet and Red List indices for sharks and rays for use in reporting on Convention on Biological Diversity Aichi and Sustainable Development Goals targets.

[13] www.edgeofexistence.org
[14] In particular, Target 6 on Sustainable Fisheries, Target 11 on Protected Areas, and Target 12 on the Prevention of Extinctions.

THRESHER OBSERVERS. © ANDY CORNISH/WWF INTERNATIONAL

Managing Shark and Ray Fisheries for Sustainability

Overfishing and poorly managed fisheries threaten shark and ray populations throughout the world. A recent assessment of 173 shark populations, comprising 46 species, found that 87% had a high management risk and 13% had a medium management risk, meaning that they all lack effective management[15]. The need for concerted action and investment in fisheries management, to stop the downward trend in many vulnerable shark and ray populations, is urgent.

Shark and ray fisheries can be shifted towards sustainability if meaningful reforms are enabled, and impediments to science-based catch limits and the fulfillment of other commitments are proactively addressed. This will require increased advocacy and management capacity, and the promotion of scientific innovation aimed at new approaches and tools to enhance reporting, monitoring, and traceability. Collectively, and starting with a number of priority species and countries, these interventions aim to ensure that fishing for sharks and rays is sustainable.

Despite wide recognition of the vulnerability of sharks and rays to overfishing, and the depletion of many species, management has been inadequate and progress under international commitments has been slow. Improvements in the conservation status of heavily fished sharks and rays can be achieved on a global scale by ensuring that international instruments, such as RFMOs and MEAs, adopt science-based conservation measures. Sound restrictions at the regional and national level can and should both prompt and stem from such international initiatives.

While there is a need for much improvement, this strategy operates on the premise that the current structure and knowledge are already sufficient to make substantial advances in managing shark and ray fisheries for sustainability, if existing mandates are properly implemented.

The current political climate is ripe for sweeping reforms in shark and ray fisheries management. This strategy is designed to build upon this momentum with carefully targeted international, national, and local interventions.

[15] Lack *et al.* (2014)

2025 SUSTAINABLE FISHERIES GOAL:

Fisheries-driven overexploitation and waste of sharks and rays are substantially reduced through increased adoption and implementation of sound, science-based fisheries management measures in at least 40 priority countries and in Areas Beyond National Jurisdiction (ABNJ).

SPURDOG IN TRAWL. © SONJA FORDHAM/SAI

PRIORITY SPECIES

Based on key fishery-related risk factors, near-term interventions are proposed for approximately 250 shark and ray species, including:

- 116 frequently caught, under-managed shark and ray species classified as Vulnerable on the IUCN Red List, such as devil rays, porbeagles, makos, and blue sharks.
- 127 Near Threatened species also lacking basic fisheries management safeguards.
- A small number of species listed as globally or regionally Endangered, which continue to be fished, either directly or incidentally, in significant numbers.

Species of Least Concern should also benefit from improvements to fisheries rules and systems.

STRATEGIC PRIORITIES

Priority countries and territories have been identified based on shark and ray landings volume, with additional considerations related to biodiversity. While some already manage much shark and ray fishing, and promote international fisheries reform, others currently lack the capacity to ensure sustainability. In addition, there are priority countries which are reluctant to impose limits because of opposition from the fishing sector.

PLAN OF ACTION

Both bottom-up and top-down interventions are identified, from piloting local alternative livelihood projects to increasing provisions for the conservation of threatened species in regional and global agreements. A range of activities are grouped into seven strategic areas:

1. Support effective implementation of IPOA-Sharks, including the development and implementation of comprehensive, frequently reviewed NPOAs, science-based catch limits, and strong compliance mechanisms by top shark-catching countries.
2. Encourage the national implementation of conservation commitments contained in international agreements, with a focus on RFMOs, CITES, and CMS.

MAKO. © JOE ROMEIRO/THE SHARK TRUST

3. Facilitate science-based fishery management at national and sub-national levels, through the provision of technical assistance and other means of support.
4. Investigate and promote means to minimize incidental fishing mortality of sharks and rays.
5. Develop and promote new models for sustainable shark and ray fisheries and foster transitioning to sustainability.
6. Improve the collection, reporting, and analysis of information to guide improved fisheries management.
7. Foster enabling conditions for positive change in shark and ray fisheries management.

BLUE SHARK. © LINDA PITKIN/THE SHARK TRUST

SELECTED ACTIVITIES:

- Promoting and, where appropriate, assisting in the completion and implementation of Shark Assessment Reports (SARs) and NPOAs.
- Promoting adoption of science-based, best-practice fishing limits within relevant RFMOs.
- Reviewing the feasibility of economic alternatives to reduce shark and ray fishing mortality with shark fishing communities.
- Encouraging research on devices, gear modifications and new gear types that minimize incidental capture and mortality of sharks and rays.
- Developing and trialing a tool for the rapid collection of species-specific data to ensure comprehensive and accurate collection of national catch data.
- Working to build capacity for accurate reporting of species-specific catch data to FAO.

SHARKS AT MARKET. © WCS NDONESIA

Ensuring Responsible Trade in Shark and Ray Products

Many shark and ray species are currently traded at levels that far exceed what can be sustainably sourced. Achieving global and systemic change requires working with key exporting and importing countries to facilitate the collection of detailed and accurate trade information, expand Customs and commodity codes, establish traceability systems, and support the implementation of relevant international agreements. Reducing trade in illegal and unsustainable products is also a key objective.

Recognition of the role of international markets in driving overfishing of sharks and rays prompted a series of decisions under CITES, beginning in 1994, that most recently included, in 2013, the listing of seven commercially important sharks and rays. These listings obligate all 181 CITES Party governments to establish international trade control measures, procedures, and monitoring systems that have the potential to be transformative for all sharks and rays, including those not listed on CITES.

Developing effective traceability systems for shark and ray products in trade is particularly important. As nearly all shark-catching countries are Parties to CITES, the new CITES obligations, and the heightened political commitment that they reflect, should result in significant progress towards legal, sustainable, traceable trade. However, full CITES compliance will require vigilance, active encouragement, and technical support. Specific objectives have been identified under four major strategic axes:

1. CITES is effective as a trade-related measure for shark and ray species, provides the impetus and framework for controlling trade in all sharks and rays, and follows processes to identify and address species requiring further protection.
2. Shark and ray trading countries collect and report accurate trade information.
3. Adequate traceability systems are in place for shark and ray products in trade.
4. Shark and ray trading countries implement the 2009 FAO Responsible Trade Guidelines.

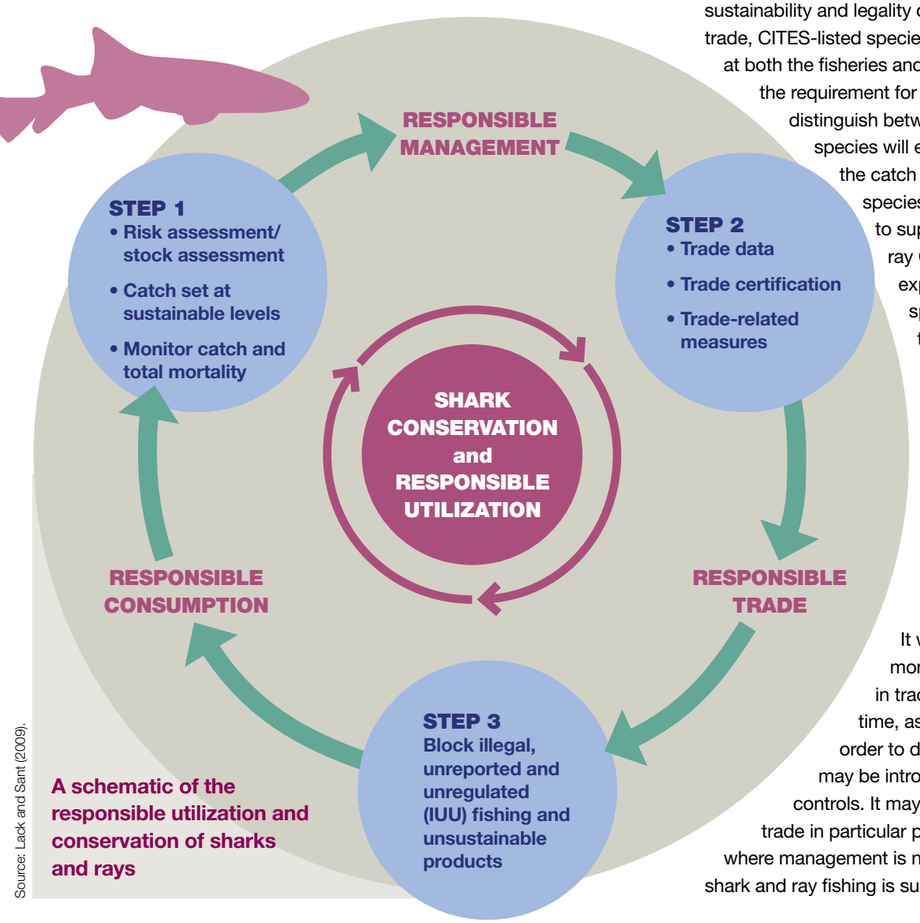
2025 RESPONSIBLE TRADE GOAL:

Effective trade controls are in place to ensure international trade in sharks and rays, and the products derived from them, is legal, sustainable and traceable.

STRATEGIC PRIORITIES

This strategy takes into account the highly complex trade routes for different shark and ray products, the fact that different products – meat, fins, liver oil, gill plates, and others – have very different markets, and the additional challenge that these routes and markets change over time. Understanding the components of responsible trade is fundamental to adequately addressing trade-related threats to shark and ray species (see Figure below).

Geographic priorities for trade control interventions are the biggest exporters, importers and processors of shark and ray products. This includes the top exporters: Argentina, Indonesia, New Zealand, Singapore, Spain, Taiwan, Thailand, Uruguay, and the USA; and the top importers: Brazil, China, Hong Kong/Macau, Republic of Korea, Mexico, Singapore, Spain, Taiwan, and Uruguay.



A schematic of the responsible utilization and conservation of sharks and rays

Source: Lack and Sant (2009).

PLAN OF ACTION

Responsible Trade objectives will be achieved by working with the major trading countries that together represent a large portion of the total products traded, thereby maximizing global conservation benefits. If these countries are able to meet their obligations to prove the sustainability and legality of products that they permit for trade, CITES-listed species will become better managed at both the fisheries and trade level. Meanwhile, the requirement for management authorities to distinguish between CITES and non-CITES species will enhance the transparency of the catch and trade of all shark and ray species. Improvements implemented to support the existing shark and ray CITES listings are thereby expected to benefit non-CITES species as well. The backbone to any trade system that seeks to collect accurate and sufficient data, and effectively block illegal or unsustainable products, is the use of stringent and cost-effective traceability systems. Trials of traceability systems will therefore be conducted, to prove their efficacy.

It will be important to regularly monitor and respond to changes in trade routes and demands over time, as well as to scrutinize trade in order to detect any new practices that may be introduced to avoid more stringent controls. It may also be necessary to block trade in particular products from certain species where management is not sufficient to ensure that shark and ray fishing is sustainable.

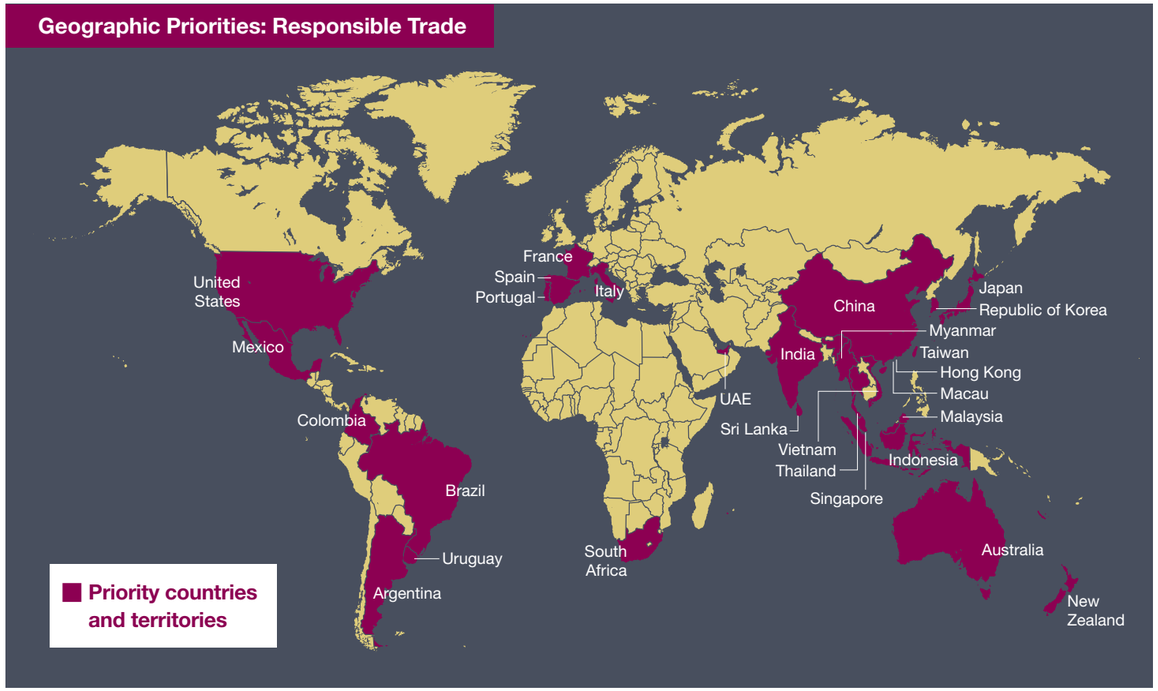
Four broad sets of actions will allow us to achieve the 2025 Responsible Trade Goal:

1. Support CITES implementation through improvements to governance frameworks, trade control implementation, data collection, traceability, and identification of products in trade, and promote such improvements for all shark and ray species that are caught and traded.
2. Identify – and bring to the attention of both authorities and consumers – additional at-risk species in trade and encourage CITES, regional and/or national controls on trade in the relevant shark and ray products.
3. Improve trade-monitoring methods to ensure accurate information is submitted to RFBs and FAO by priority trading countries/territories.
4. Produce evidence – using controlled trials – that a traceability system for shark and ray products can be practically and cost-effectively implemented from boat to market, generating necessary support for regulations by the use of traceability systems which make use of detailed labeling, tagging and other methods.

SELECTED ACTIVITIES:

- Developing training packages for CITES NDF guidance for sharks and rays.
- Advocating for the adoption of CITES compliance measures.
- Creating a monitoring system to compile available trade information and detect short-term changes in trends from key trading countries.
- Supporting the development of accurate, more specific Customs codes for priority commodities and species.
- Designing, testing, validating and verifying a traceability system for shark fisheries, whether they be as a result of direct targeting or a secondary catch.
- Identifying and promoting restrictions on species in trade that are at a high risk of overexploitation due to inherent vulnerability and/or inadequate management.

Geographic Priorities: Responsible Trade



SKATE, NYC FISH MARKET. © ERIKA REUTER/WCS

Encouraging Responsible Consumption of Shark and Ray Products

Demand for shark and ray fins and meat, mobulid gill plates, and freshwater stingrays is likely to be considerably higher than international trade figures suggest, due to undocumented domestic markets, inadequate species labeling, and incomplete trade reporting.

Furthermore, demand and consumption of these products are dynamic, culturally sensitive, and not fully understood, presenting a significant challenge for efforts to reduce market demand. Reducing demand for shark and ray products, and shifting it away from unsustainable fisheries and endangered species towards sustainable, traceable alternatives, will be essential for ending shark and ray overfishing.

This strategy recognizes that, while there is no apparent demand for unsustainable shark products specifically, the current paucity of genuinely sustainable shark fisheries, or traceable shark products from them, means that demand for shark and ray products is inevitably being met from unsustainable – or entirely unknown – sources. Sound fisheries management and effective traceability systems can result in sustainable shark and ray products from relatively productive species. For products from highly vulnerable species, such as manta rays, however, the goal is to eliminate markets altogether.

Prior to recently observed declines, a decades-long upward trend in the shark fin trade was driven by economic growth and the expansion of the Chinese middle class. This trade is known to include fins from endangered sawfishes, guitarfishes, and wedgefishes. Fortunately, there is now promising momentum for demand reduction in certain key shark fin markets, such as Hong Kong, which can be built upon and replicated in other areas.

While shark fins tend to attract more attention, even with recent declines in demand, it is important to note that the global trade in shark and ray meat is on the rise. Furthermore, the available data does not account for purely domestic markets, which supply most of the meat consumed in key countries, such as India and Indonesia. The global market for meat is therefore likely to be greatly underestimated, as well as far more diverse and widespread than that for fins, which are mainly sent to East and Southeast Asia. For example, owing primarily to Spain, the EU is not only the top shark and ray meat trader, but also by far the world's largest shark and ray fishing entity. Another distinction is that fins are luxury items, while meat is often an important source of protein in many countries throughout the world.

Beyond the two major global commodities of fins and meat are the smaller yet still significant markets for mobulid gill plates, liver oil (primarily from deepwater species), and freshwater stingrays. The gill plate trade, centered in Guangzhou, China, has stimulated intensive fishing for manta and devil rays in numerous countries. Shark liver oil – primarily from deep-sea species and marketed as "squalene" – is used in the pharmaceutical and cosmetics industries. South American freshwater stingrays are captured to supply an international ornamental trade and captive-breeding facilities. The gill plate market in Guangzhou, in particular, needs urgent, carefully targeted action; as it is highly unlikely that a sustainable source of these gill plates could ever be found, elimination of this market is likely to be the most responsible action for these species.

To realize the goals of this strategy, a much better understanding of the complex interactions and drivers behind the market demand for different products, and the mechanisms by which this demand drives fisheries overexploitation, needs to be gained. Obtaining this insight – and anticipating, understanding and addressing shifts in markets and trade routes – are key priorities.

AQUARIUM. © JULIE LARSEN MAHER/WCS

STRATEGIC PRIORITIES

Priority actions focus on the most important global markets for internationally traded products, as well as the domestic markets of several of the largest shark and ray catching countries and territories. Interventions focus on fin, meat, mobulid gill plates, and squalene as the primary products for which sharks and rays are fished. More specifically, the strategy will build on initial achievements in reducing shark fin consumption in China and Hong Kong by adapting and improving the approaches for roll-out to other areas. All actions will be guided by the wide variability and diversity of cultures and practices involved in the markets for different products, and carefully targeted to fit the circumstances of consumers and industry in different regions.

PLAN OF ACTION

Strategic interventions are primarily organized around specific shark and ray commodities; multi-level action plans, targeting different consumer groups and priority markets, will be necessary to achieve responsible consumption of shark and ray fins, meat, gill plates, squalene, and freshwater stingrays. To achieve widespread impact, the Responsible Consumption Strategy has been explicitly designed to refine approaches that can be used across multiple geographic areas, while still being locally appropriate.

Significant reductions in demand for unsustainable shark and ray products will require a reliable supply of alternatives obtained from sustainable sources. Demand for sustainable seafood can be a powerful driving force for motivating fisheries to move towards sustainability, introduce traceability systems, and ultimately become certified. Considering that, at the time of writing, there is only one certified sustainable shark fishery operating, this is a longer-term incentive, but it is critically important for the success of the Global Strategy that markets for sustainable shark and ray products emerge. This will require an initial focus on identifying those fisheries that could potentially produce sustainable and traceable products.

2025 RESPONSIBLE CONSUMPTION GOAL:

The demand for (largely unsustainable) shark and ray meat, fins, squalene, manta and devil ray gill plates, and freshwater stingrays is significantly reduced in the most important global markets, while markets increasingly demand that any shark and ray products are sustainably produced and traceable.

SILKY SHARKS. © DAVID AINSBURY/THE SHARK TRUST

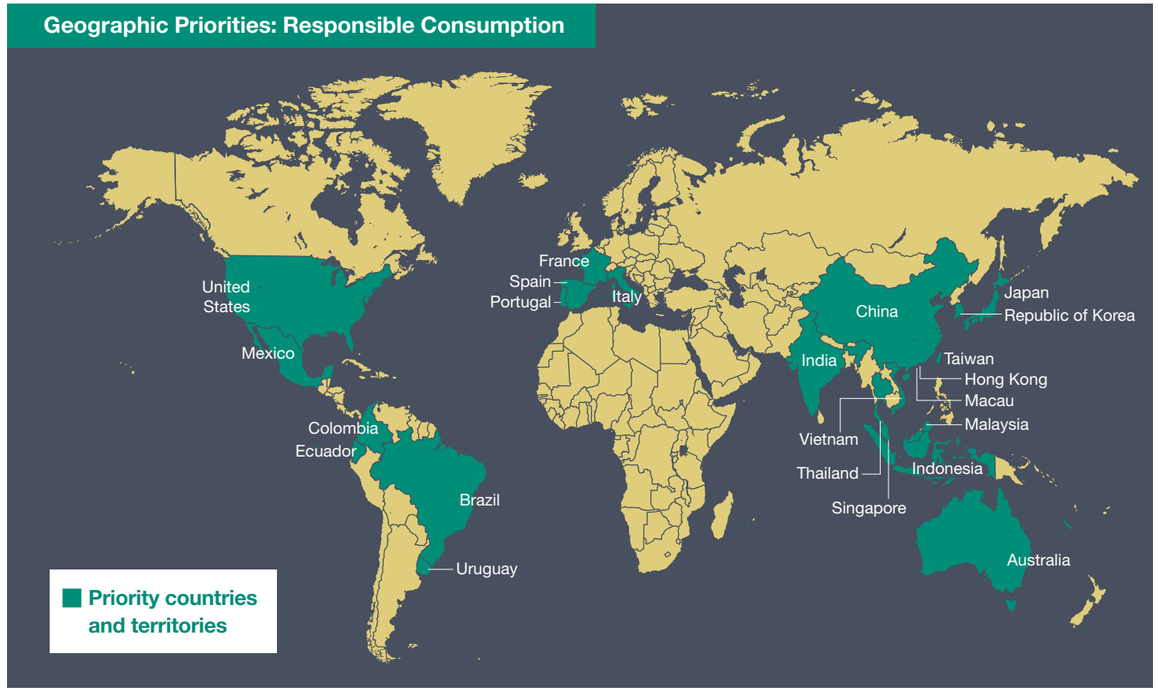
The success of the Global Strategy depends on the ability to predict future events through rigorous analysis of the market forces that drive supply chains. An early warning system needs to be developed to detect and respond to emerging markets for shark and ray products.

These actions will generate deeper understanding of the ways in which demand for different shark and ray products drives the overfishing of particular species, and the ways in which responsible consumption can lead to reduced fishery mortality. Both sides of this equation are equally important for shark and ray conservation.

SELECTED ACTIVITIES:

- Conducting analyses of international shippers, to identify key routes and cargo carriers linking high-risk fisheries with key urban markets.
- Conducting consumer surveys to better understand preferences for shark and ray meat.
- Scaling up campaigns to encourage individuals and corporations not to purchase (unsustainable) shark and ray products.
- Refining social-marketing approaches that will lead to behavioral change in individual consumers.
- Working with retailers/point-of-sale providers to ensure the supply of sustainable/certified seafood products is available in core markets in the longer term.
- Developing list of shark-based squalene alternatives (i.e. phytosqualene) and educating squalene consumers on the conservation implications of their consumption.
- Exploring opportunities for community-based Fishery Improvement Projects (FIPs) for freshwater stingrays for the aquarium trade.

Geographic Priorities: Responsible Consumption



A Global Sharks and Rays Initiative

The implementation of this Global Strategy involves an ambitious, collaborative initiative that is dedicated to securing a brighter future for these remarkable species, fundamentally transforming how they are viewed, managed, and conserved. Rising interest in shark and ray conservation, by the public and governments alike, offers an unprecedented opportunity to catalyze change for the benefit of species, ecosystems, and humankind.

STINGRAYS AT MARKET © ANDY CORNISH/WWF INTERNATIONAL

The Global Sharks and Rays Initiative (GSRI) is a partnership of:

IUCN Species Survival Commission (SSC) Shark Specialist Group (SSG): A global network of 128 experts in the fields of shark biology, conservation, management, fisheries and taxonomy, that promotes the sustainable use, wise management and conservation of all sharks, rays and chimaeras and serves as the custodian for the chondrichthyan fishes for the *IUCN Red List of Threatened Species*.
www.iucnssg.org

Shark Advocates International (SAI): Operating as a project of The Ocean Foundation to provide leadership in advancing sound, science-based conservation policies for sharks and rays. SAI aims to not only accurately communicate the plight of sharks to the media and the public, but also channel the resulting concern into concrete conservation actions – particularly through the world's Regional Fisheries Management Organizations.
www.sharkadvocates.org

The Shark Trust: A membership organization established in the UK to represent sharks, skates, rays and chimaeras to the public, industry and policy makers. The Shark Trust advocates for science-based conservation and sustainably managed fisheries and sits at the center of a network of stakeholders and NGOs at UK, EU and global levels, undertaking a range of high-profile projects and campaigns across policy, stakeholder engagement, public engagement and citizen science.
www.sharktrust.org

TRAFFIC: An international conservation organization with offices in more than 20 locations worldwide, with a mission to ensure that trade in wild plants and animals is not a threat to the conservation of nature. In 2014, TRAFFIC, in collaboration with WWF, launched *Sharks: Restoring the Balance*, a global initiative to conserve sharks and rays.
www.traffic.org/sharks

Wildlife Conservation Society (WCS): A global conservation organization operating field programs in nearly 60 countries, WCS *saves wildlife and wild places worldwide through science, conservation action, education, and inspiring people to value nature*. WCS's marine portfolio includes programs aimed at recovering threatened marine species, halting the decline of fragile marine ecosystems, enhancing scientific understanding, and improving the management of fisheries and marine protected areas and the livelihoods of coastal communities. Sharks and rays are one of six *WCS:2020* global priority species groups.
www.wcs.org/our-work/wildlife/sharks-skates-rays

World Wide Fund for Nature (WWF): WWF is one of the world's largest and most respected independent conservation organizations, with over 5 million supporters and a global network active in over 100 countries. Launched in collaboration with TRAFFIC in 2014, *Sharks: Restoring the Balance* is WWF's flagship initiative to conserve sharks and rays. It focuses on improving the management of shark and ray fisheries and tourism operations, reducing demand for unsustainable products, and moving the international trade in sharks and rays toward sustainability.
wwf.panda.org/what_we_do/endangered_species/sharks

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SHARK
Specialist
Group

IUCN
SSC

SHARK
ADVOCATES
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SHARK
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TRAFFIC
the wildlife trade monitoring network

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